

REC'D JAN 25 1972

# LASSITER KUMA OILS LTD.

"THE TOP OF THE WORLD COMPANY"



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# LASSITER KUMA OILS LTD.

<b>Registered Office</b>	706 IMPERIAL BANK BUILDING, <i>Edmonton, Alberta</i>
<b>Officers</b>	B. C. TANNER, C.A., S.M., (M.I.T.), <i>President</i> G. M. SUNDLIE, R.I.A., <i>Secretary-Treasurer</i>
<b>Directors</b>	J. M. BALLACHEY, D.F.C., B.A., LL.B., <i>Calgary, Alberta</i> J. KATZIN, <i>Edmonton, Alberta</i> W. LESYK, <i>Victoria, B.C.</i> H. MARTINEAU, <i>Edmonton, Alberta</i> H. O'DONNELL, <i>Thornhill, Ontario</i> B. SHIKAZE, B.Comm., C.A., <i>Edmonton, Alberta</i> G. M. SUNDLIE, R.I.A., <i>Edmonton, Alberta</i> B. C. TANNER, C.A., S.M., (M.I.T.), <i>Edmonton, Alberta</i>
<b>Registrar and Transfer Agents</b>	NORTH WEST TRUST COMPANY, <i>Calgary, Alberta</i> MONTREAL TRUST COMPANY, <i>Toronto, Ontario</i>
<b>Solicitors</b>	HOWARD, MOORE, DIXON, MACKIE & FORSYTH, <i>Calgary, Alberta</i>
<b>Bankers</b>	CANADIAN IMPERIAL BANK OF COMMERCE
<b>Auditors</b>	PEAT, MARWICK, MITCHELL & CO.

This brochure dealing with the prospects of finding petroleum on the Company's properties has been prepared on behalf of Lassiter Kuma by Bryce Cameron Consultants Ltd. of Calgary.

Bryce Cameron Consultants Ltd. specialize on the Arctic Islands of Canada and deal with all matters connected with petroleum exploration, logistics, drilling operation organization and company management.

Bryce Cameron, B.Sc., P. Eng., F. Inst. Pet., has had oil exploration experience in the Middle East, South America, North Sea and Western Canada. On behalf of a company, of which he was then President, he acquired, as far back as January, 1959, permits covering selected structures in the Arctic Islands. He organized many geological parties for work in these islands, participated in the drilling of the first well in these regions and was operator of the second. He owns 128,500 shares of Lassiter Kuma Oils Ltd.

Use has been made of the many valuable reports on the Islands that have been published by officers of the Geological Survey of Canada. Some data prepared for Kuma by J. C. Sproule and Associates has also been utilized.

Bryce Cameron Consultants Ltd. and Lassiter Kuma wish to state that this brochure has been prepared with care and, to the best of their knowledge, gives a true presentation of the overall situation.

Calgary, November 5 1971.

## I HISTORY OF LASSITER KUMA OILS LTD.

The Lassiter syndicate, named after a prominent Alberta rancher, O. B. Lassiter, was formed shortly after the famed Leduc oil discovery. Subsequently, in 1952, Lassiter Petroleums Ltd. was incorporated and was active in exploration in Alberta for several years. Mr. B. C. Tanner of Edmonton, who was a syndicate member, became President of the new company.

In 1963 the Lobitos-Round Valley companies (now controlled by Burmah Oil interests) which had been the leaders in geologically exploring widespread acreage in the Arctic Island, invited industry to join them in drilling a well at Resolute on Cornwallis Island. Lassiter Petroleums Ltd. and several independent companies accepted this invitation, and the well was drilled during the fall of that year. Lassiter at the same time also obtained an interest in the Cornwallis Central Dome where a well was recently drilled. These Cornwallis arrangements included the important right to join Lobitos-Round Valley in subsequent drilling on three major structures in the Eureka area of Axel Heiberg and Ellesmere Islands further north. This led to Lassiter having a carried interest in the currently drilling well on the giant Fosheim anticline and working interests in two other giant structures nearby, namely Black Top and Depot Point. In addition to arranging for these interests Lassiter also acquired interests in carefully selected Permits covering other well defined structures with excellent prospects for large oil reserves and well located for marine transportation purposes.

Kuma Oils Ltd., incorporated in 1965, had also been active in acquiring interests in Permits covering well defined structures in the Arctic Islands. In May, 1969, Kuma obtained an extensive spread of Permits on South Ellesmere Island. Geological field work on this acreage for the past two seasons has supported the initial view that the oil and gas prospects of this acreage are promising.

The interests of Lassiter and those of Kuma were so complementary that a merger of the two was considered to be advantageous. The shareholders of both companies approved the amalgamation and accordingly the new public company, Lassiter Kuma Oils Ltd., was incorporated on September 3, 1971.

Rec'd: JAN 25 1972  
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Price:  
Acc. No. *B.C. Tanner*

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## **II THE ARCTIC ISLANDS OF CANADA**

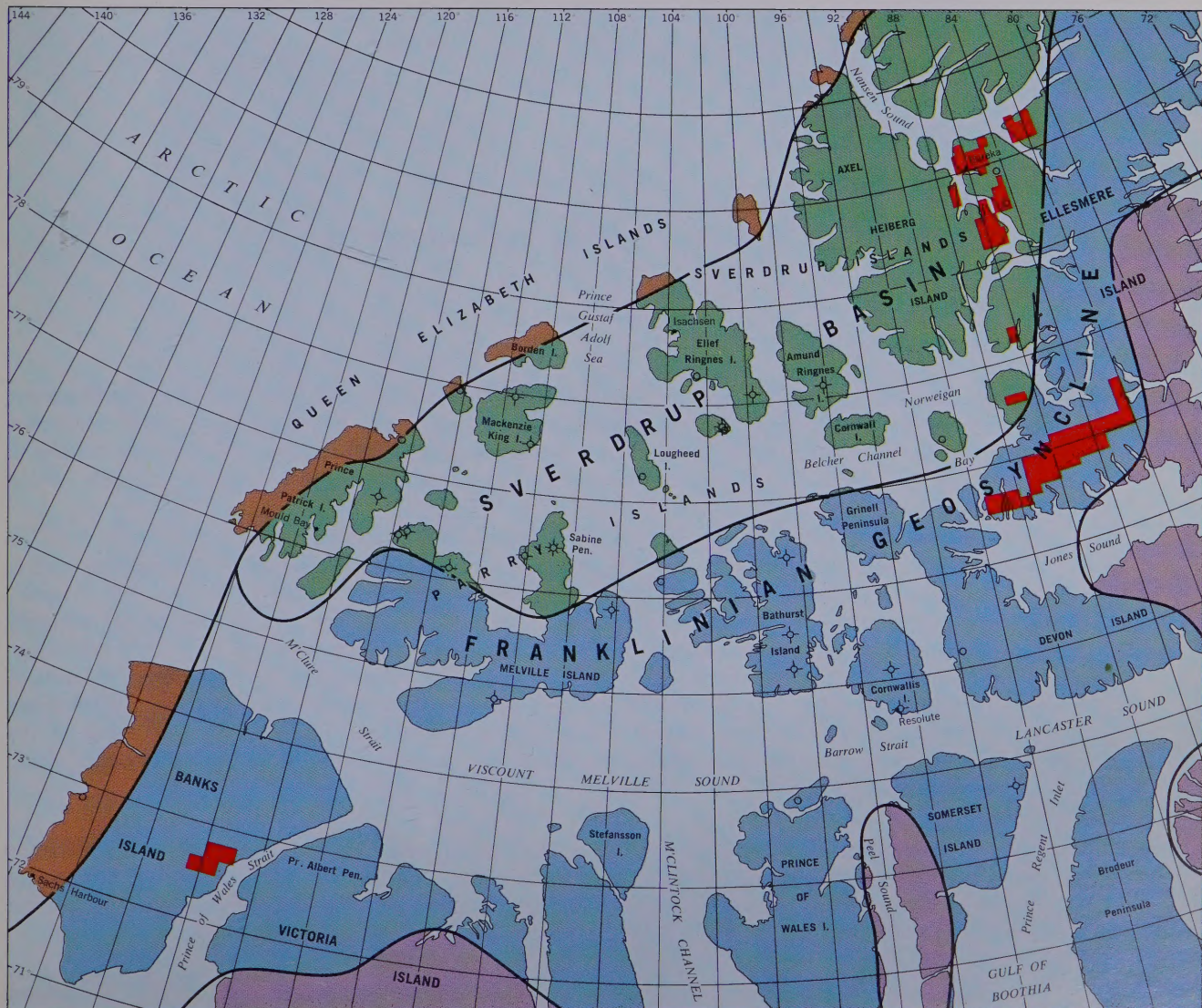
What was in the early 1800's the scene of exploration by those seeking the northwest passage for a trade route to the Orient has now changed to a region where vast sums are being spent in the search for oil and gas with encouraging results.

The setting is unique in that the lands, protected by ice and snow for nine months of the year, are exposed in the summer and reveal the outcropping beds and the numerous and in many cases gigantic structures suitable for holding oil and gas. In other parts of the world these would be covered the year round by blown sand or tropical jungle, making the exploration task much more difficult.

Geologically one can say that the Arctic Islands have all the attributes for large scale production of hydrocarbons. A thick sedimentary series of strata, the Sverdrup Basin, is filled with folded rocks of relatively young age. Fringing this basin is the Franklinian Geosyncline, an area of thick folded sediments older in age. Both of these possess all the requirements for the production of oil and gas in large volumes—much in the way of hydrocarbon source formations, thick porous reservoir beds, good impervious caprock strata and structural traps as large as those of the Middle East. All of these potential pools are close to tidewater so crude oil and liquefied gas will be readily transported, particularly from the eastern parts of the islands, in large ice strengthened tankers to the markets of the world.

Already two enormous gas fields have been found and there is little doubt that oil fields capable of producing in very large daily quantities will shortly be discovered. To sum up, the prospects for the Arctic Islands are excellent.





- SVERDRUP BASIN (mainly Mesozoic)
- FRANKLINIAN GEOSYNCLINE and other regions (mainly Paleozoic)
- ARCTIC COASTAL PLAIN
- PRECAMBRIAN

- LEGEND**
- LOCATION OR DRILLING WELL
  - GAS WELL
  - ABANDONED WELL

**ARCTIC ISLANDS**  
NORTHWEST TERRITORIES

LASSITER KUMA LAND HOLDINGS

50 50 100  
MILES



### **III THE EUREKA AREA PROSPECTS**

Large anticlinal structures are present in the Eureka area and outcrops nearby of clean porous sands, reefs and other carbonate rocks indicate that these structures should have thick productive reservoir conditions. Moreover all these clearly visible structures have several overlying formations in which oil can be discovered. Every exploratory well has, therefore, multi-horizon prospects which greatly increase the chances of success.

Lassiter Kuma has interests in as many as nine separate features suitable for trapping hydrocarbons in very large quantities. Six of them have great potential in formations in the Triassic, Permian and Carboniferous, one has very good chances of oil discovery in a number of relatively shallow Permian and Carboniferous horizons, while two have excellent prospects for finding petroleum in several separate sand formations of Cretaceous and Jurassic ages. The Lassiter Kuma interests in these structures range from 1¼% to 10% working interest. It is quite conceivable that the reserves of these potential fields and their daily production rates will be on the same scale as those of the Middle East fields and therefore it follows that even the smallest of the Company's interests could be of great value.

An important feature of the region is its accessibility by water. For many years the weather station at Eureka has been regularly restocked by ship during the short open water season. Up-to-date ice strengthened tankers will be able to transport oil and liquefied gas the whole year round much more readily from this eastern part of the islands than from Sverdrup Basin regions further to the west.

Dealing with current operations, an exploratory well is at the present moment being drilled on one of the structures in which Lassiter Kuma has an interest. In addition a location has been chosen just off the Company's acreage on an anticline which extends under the Company's holdings. Drilling will start there in the near future. The prospects are extremely good. Finally it can be said that the tempo of activity in the Eureka area is increasing considerably and the announcement of still more drilling operations can be expected shortly.





 LASSITER KUMA LAND HOLDINGS

**EUREKA SOUND AREA**  
ARCTIC ISLANDS — N.W.T.

10 0 10 20 30  
MILES



## IV COMPANY PERMITS IN THE EUREKA AREA

All nine of the Eureka area structures in which Lassiter Kuma have interests have excellent prospects for the discovery of oil and gas.

### 1. CAPE LOCKWOOD

#### (a) Geology

The surface expression of this anticline, visible in the northern part of the acreage, can be compared with the tip of an iceberg—very little to be seen above the surface but lots existing below.

The exposed rocks at the crest belong to the Bjorne Formation of Triassic age and because of known shale breaks in the Bjorne there is a possibility of production from it. However the main target formations are of Permian and Carboniferous ages. Outcrops of these rocks are exposed to the southeast and provide the necessary information to enable one to say that several porous reservoir formations should be present below the surface feature. In addition an exposed Permian reef, more than 1000' thick lying to the north on the other side of Greely Fiord, could easily trend southwards and be present under the structure and also under other parts of the acreage. The drilling depth to test all the prospective reservoirs should be relatively shallow.

Another well site of considerable interest lies in the southeast part of the acreage. Here the trapping mechanism for oil could be provided by two intersecting faults.

#### (b) Statistics

Acreage . . . . .	A1237	21,471 acres
	1238	43,494 acres
	1239	43,494 acres
	1240	43,494 acres
	1332	21,471 acres
		<u>173,424 acres</u>

Approximate area of structure at spill point . . . . .	6400 acres or 10 square miles
Term of Permits before going to lease . . . . .	May, 1978
Operator . . . . .	Panarctic Oils Ltd.
Lassiter Kuma . . . . .	10% working interest



# LEGEND

## FORMATIONS

### QUATERNARY

Q

### JURASSIC

J

### TRIASSIC

Trh Heiberg Formation

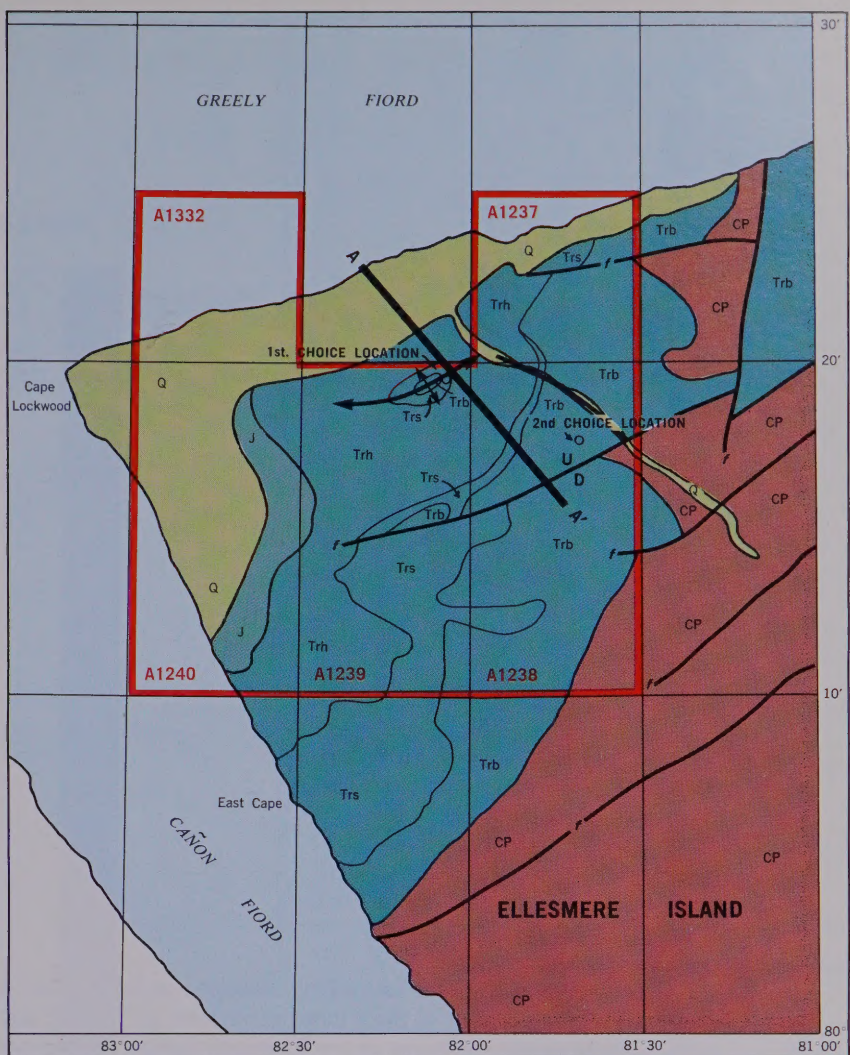
Trs Schei Point Formation

Trba Blaa Mountain Formation

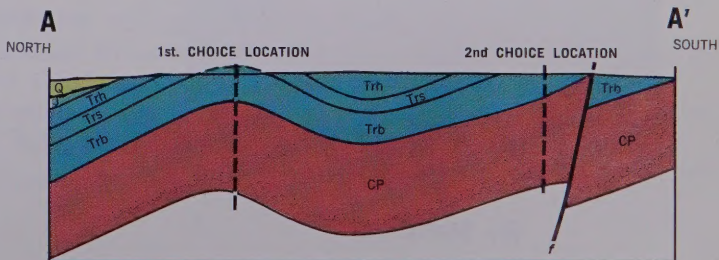
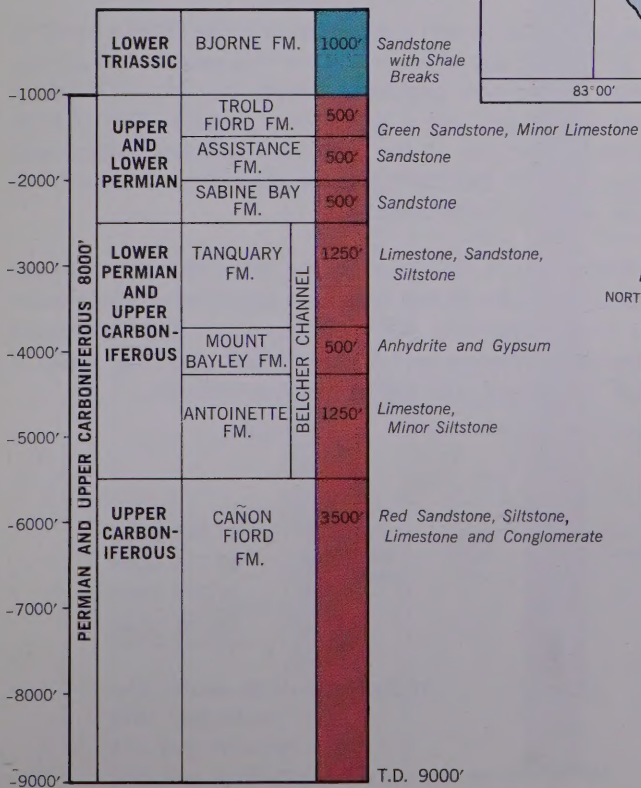
Trb Bjorne Formation

### CARBONIFEROUS/PERMIAN

CP



## STRATIGRAPHIC SECTION



**CAPE LOCKWOOD AREA**  
ARCTIC ISLANDS — N.W.T.

LASSITER KUMA LAND HOLDINGS



## 2. SLIDRE FIORD

### (a) Geology

This acreage covers a fairly long S-shaped anticline that is well exposed west of the Eureka weather station. The main target is the Bjorne sandstone of Triassic age of which several thousand feet of porous beds outcrop to the southeast in the Sawtooth Range. As one goes westwards deeper into the sedimentary basin these sands change to siltstones, sands and shales and lose a lot of their porosity. This change in facies is probably transitional and gradual. However, because of the observed increased coarseness of the sand grains of the Bjorne in the more northerly part of the Sawtooth, the possibility of quite thick clean sands extending as far west as this structure appears reasonable.

Caprock preventing upward migration of hydrocarbons is provided by the Blaa Mountain shales. These are exposed in the crestal region. The fact that very little of this formation has been eroded means that a well will have to drill as much as 5000' before reaching the main reservoir. This additional drilling naturally increases the depth to the underlying Permian and Carboniferous and may make it advisable in these early days of Islands exploration to test only the top part of the Permian.

### (b) Statistics

Acreage . . . . .	A827	44,228 acres
	828	22,114 acres
	829	21,839 acres
		<hr/> 88,181 acres

Approximate area of structure . . . . .	16,000 acres or 25 square miles
Term of Permits before going to lease . . . . .	September, 1975
Operator . . . . .	Panarctic Oils Ltd.
Lassiter Kuma . . . . .	5% working interest subject to 10% gross overriding royalty.



# LEGEND

## FORMATIONS

### QUATERNARY



### CRETACEOUS



### JURASSIC



### TRIASSIC

Trh Heiberg Fm.

Trba Blaa Mountain Fm.

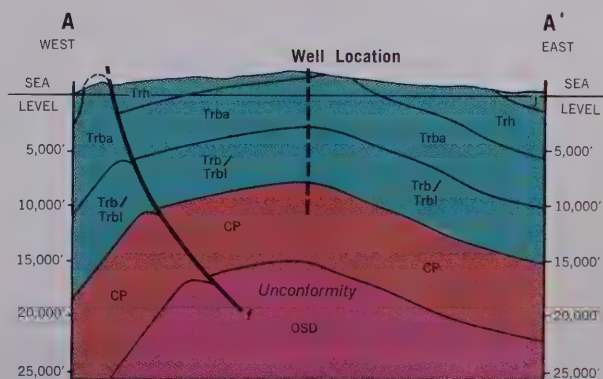
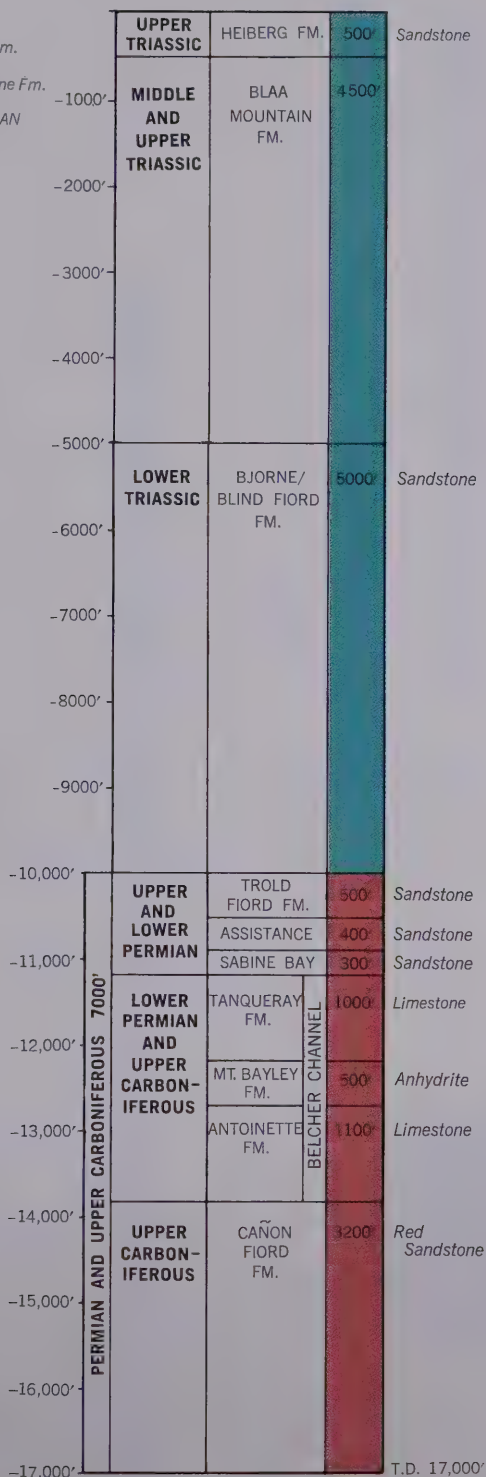
Trb, Trbl Blind Fiord/Bjorne Fm.

### CARBONIFEROUS/PERMIAN

CP Carboniferous/Permian

OSD Ordovician/Silurian / Devonian

## STRATIGRAPHIC SECTION



**SLIDRE FIORD AREA**  
ARCTIC ISLANDS — N.W.T.

  LASSITER KUMA LAND HOLDINGS



### 3. BLACK TOP RIDGE

#### (a) Geology

This dark massive structure dominates the scene at the Eureka weather station.

Like Slidre the main target is the Bjorne sandstone of Triassic age. However this structure is closer to the outcrops of clean porous sands in the Sawtooth Range and therefore the chances of porous beds thicker than those at Slidre are improved.

The trapping feature is a combination of an asymmetrical anticlinal fold trending to the northeast (like Lockwood and unlike all other Eureka structures) together with a major fault on the west which provides the requisite closure for hydrocarbons. As much of the overlying Blaa caprock has been eroded, the Bjorne formation can be fully tested by a well of modest depth, while the underlying Permian and Carboniferous formations can be drilled through and evaluated without drilling extremely deeply.

The size of this structure amounting to approximately 50 square miles at spill point has to be emphasized. It is one of the giants of the region and is as big as some in the Middle East.

#### (b) Statistics

Acreage . . . . .	A823	
	824	132,960 acres
	825	
	826	
	957	21,839 acres
		<u>154,799 acres</u>

Approximate area of structure . . . . .	32,000 acres or 50 square miles
Term of Permits before going to lease . . . . .	September, 1975
Operator . . . . .	Panarctic Oils Ltd.
Lassiter Kuma . . . . .	2½% working interest in all permits or 1¼% working interest if Panarctic elects to drill a 50% earning well. Either one is subject to a 25% net carried interest.

# LEGEND

## FORMATIONS

### QUATERNARY

Q

### TERTIARY

Te

### CRETACEOUS

Undivided

### JURASSIC

Undivided

### TRIASSIC

Trh Heiberg Fm.

Trba Blaa Mountain Fm.

Trb / Trbl Blind Fiord/Bjorne Fm.

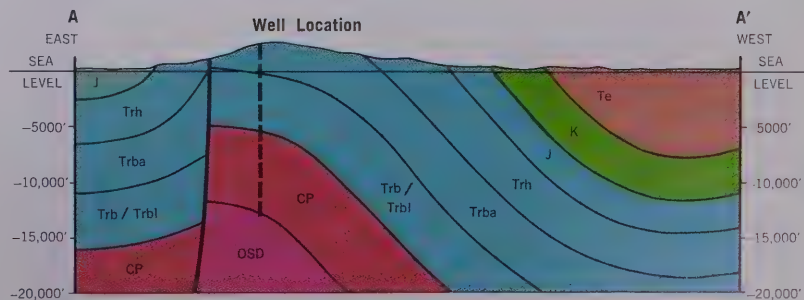
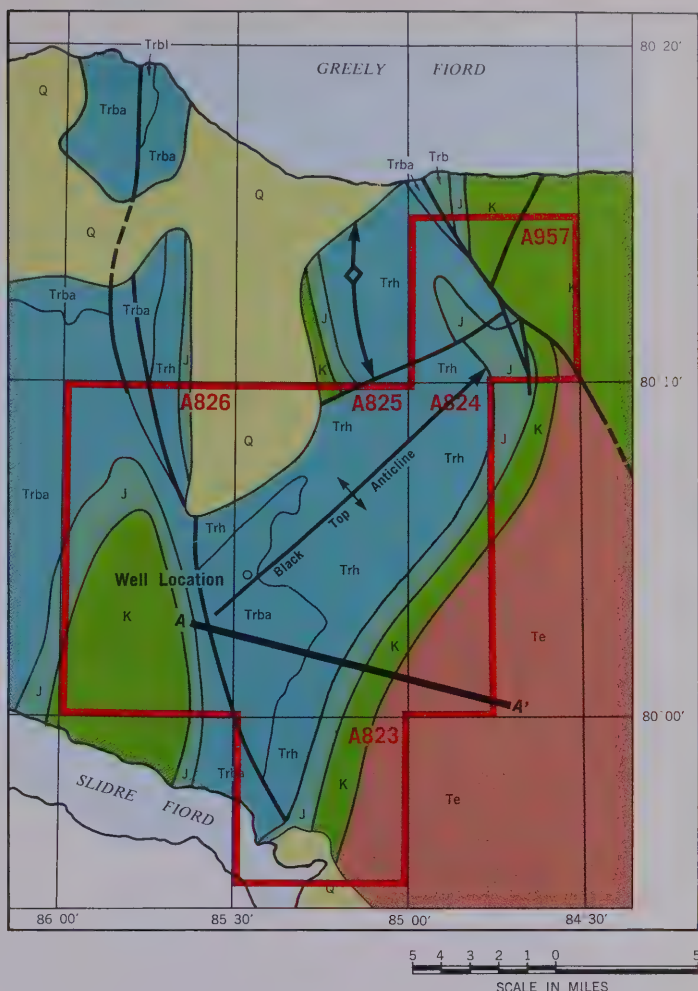
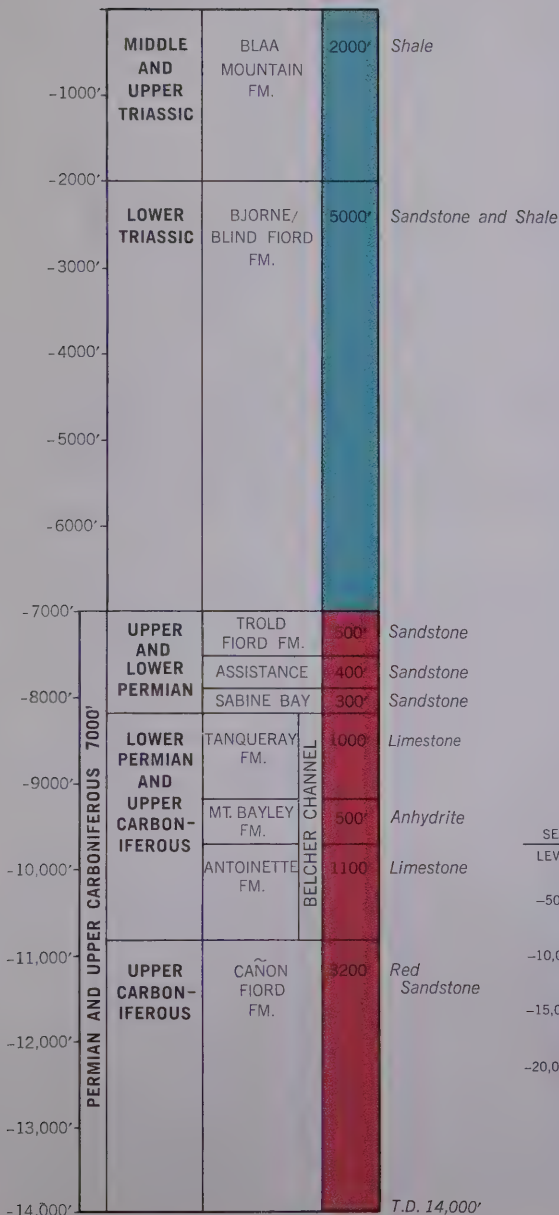
### CARBONIFEROUS/PERMIAN

CP

### ORDOVICIAN/SILURIAN/DEVONIAN

OSD

## STRATIGRAPHIC SECTION



## BLACK TOP RIDGE AREA ARCTIC ISLANDS — N.W.T.

□ LASSITER KUMA LAND HOLDINGS



#### 4. SKRAELING POINT

##### (a) Geology

This is another large surface feature with Triassic prospects, the Bjorne sandstone again being the main target. Because the structure is located some distance further out into the Triassic basin it is possible that these sandstones may have changed to the equivalent sand shale Blind Fiord facies. However the outcrop of dolomite in the Blind Fiord on the north side of Nansen Fiord is intriguing because it suggests the possibility of a favourable dolomite reservoir being found in addition to fingers of porous sands.

As the crestal area of the anticline is covered by Triassic Heiberg, the drilling depth to penetrate through the Bjorne/Blind Fiord formation will probably be as much as 12,000 feet. This suggests that it may not be economic to try to evaluate the underlying Permian and Carboniferous prospects at this stage of exploration.

Lassiter Kuma's Permit covers only the southern plunging end of the structure but nevertheless the reserves under this acreage could be quite considerable. Except for this Skraeling anticline and the one at Romulus the company's interests in the petroleum prospects of the Eureka area cover a full 100% of each structure.

Seismic work has recently been conducted by another company on the main part of the structure and a deep test may be drilled in 1972. Such a development would be of great importance to Lassiter Kuma.

##### (b) Statistics

Acreage . . . . .	A822	22,574 acres
Approximate area of structure . . . . .	38,400 acres or 60 square miles	
Term of Permit before going to lease . . . . .		September, 1975
Operator . . . . .	Ashland Oil Canada Limited	
Lassiter Kuma . . . . .		5% of net profit

# LEGEND

## FORMATIONS

### QUATERNARY

Q

### TERTIARY

Te

### JURASSIC / CRETACEOUS

Jr Undivided

### TRIASSIC

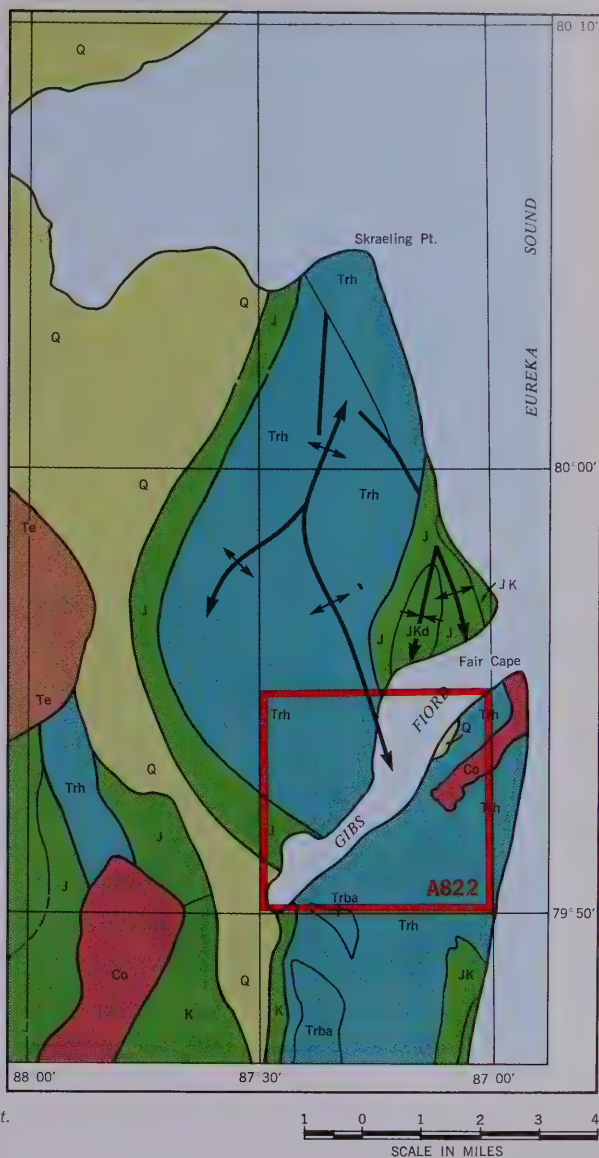
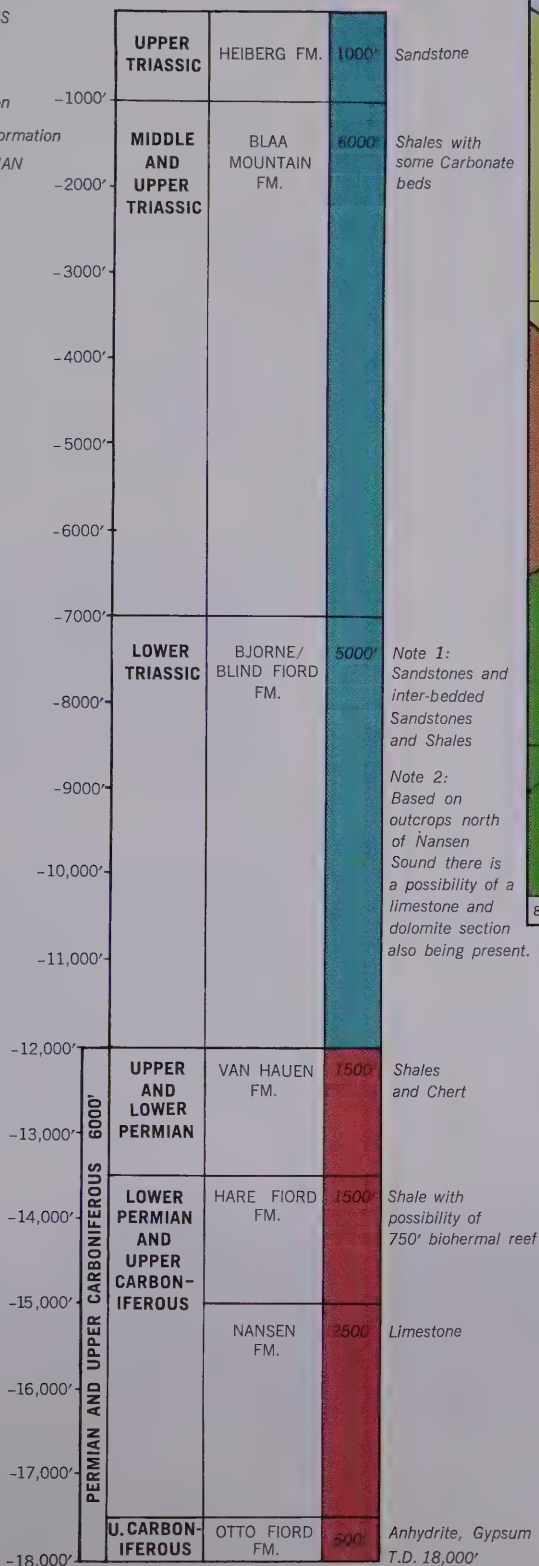
Trh Heiberg Formation

Trba Blaa Mountain Formation

### CARBONIFEROUS / PERMIAN

Co

## STRATIGRAPHIC SECTION



## SKRAELING POINT AREA

ARCTIC ISLANDS — N.W.T.

LASSITER KUMA LAND HOLDINGS



## 5. GIBS FIORD

### (a) Geology

This is a very clearly visible structure situated just south of the Skraeling feature. The caprock is the Blaa Mountain formation, much of which has been protected by igneous sills of relatively young Cretaceous age. However, despite this protective covering considerable erosion of the caprock has occurred. This means that the depth a well will have to drill to test the Bjorne/Blind Fiord formation is reduced and also makes possible the testing of all of the underlying Permian and Carboniferous beds.

An extremely large dome caused by the upward movement of Carboniferous evaporitic salts exists at Mokka Fiord to the south of the structure. In addition a narrow window of evaporites protrudes through the Triassic on the southern part of the anticline itself. While production could well be found in the Bjorne/Blind Fiord formation on either side of this window, care should be exercised in locating the first exploratory well. A good location could be on the crest of the structure a little to the north of the window.

Igneous sills not only here but in other Eureka structures are most interesting. These sills, having cooled and contracted in competent porous beds, can provide excellent channels for oil flow in a reservoir and thereby increase a well's daily rate of production. Production rates exceeding 100,000 barrels per day from wells in Mexico's "Golden Lane" were in part due to this advantageous effect.

### (b) Statistics

Acreage	A821	45,699 acres
Approximate area of structure	22,400 acres or 35 square miles	
Term of Permit before going to lease	September, 1975	
Operator	Ashland Oil Canada Limited	
Lassiter Kuma	5% of net profits	

# LEGEND

## FORMATIONS

### MESOZOIC/CRETACEOUS

- Kc Christopher Formation
- Isachsen Formation

### JURASSIC/CRETACEOUS

- JK Undivided

### TRIASSIC

- Trh Heiberg Formation
- Trbl Blaå Mountain Formation
- Trbl Blind Fiord Formation

### PALEOZOIC/LOWER PERMIAN

- Van Hauen Formation 1000'

### CARBONIFEROUS/PERMIAN

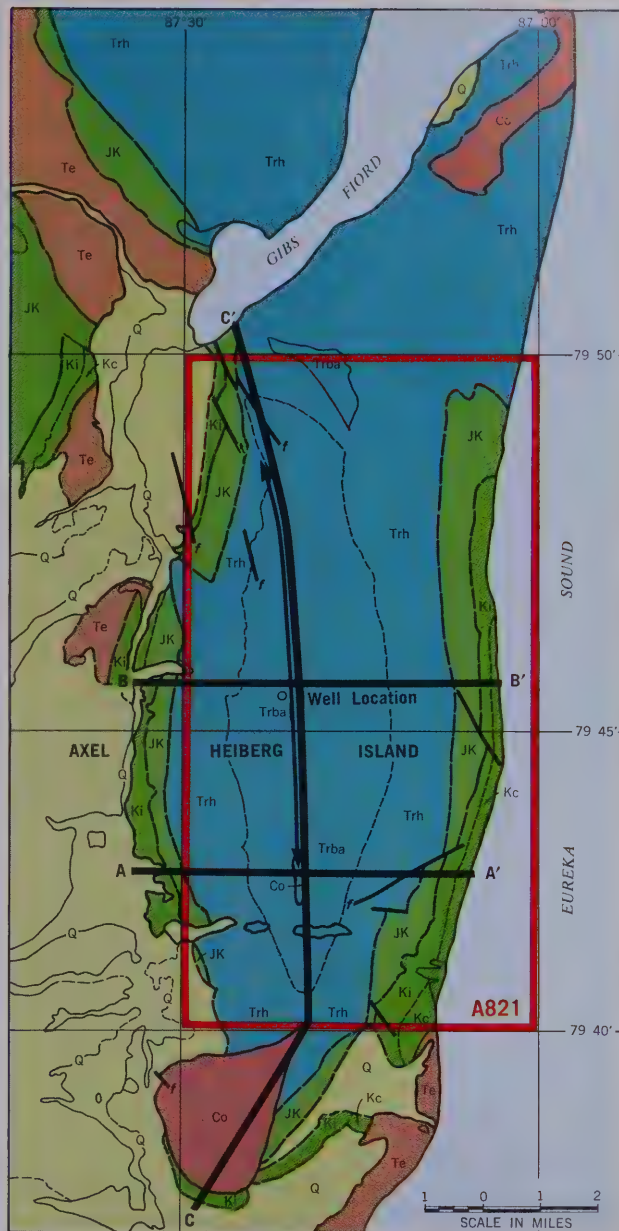
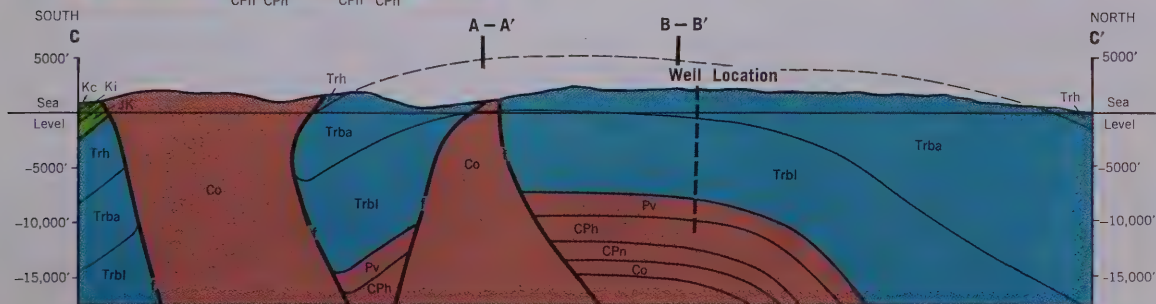
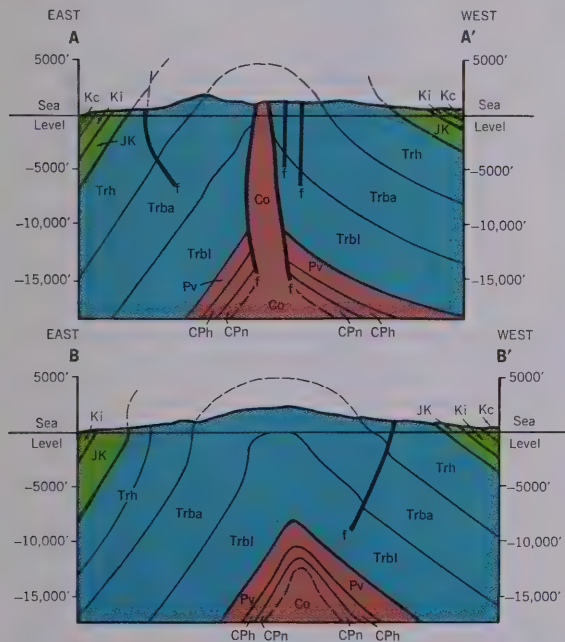
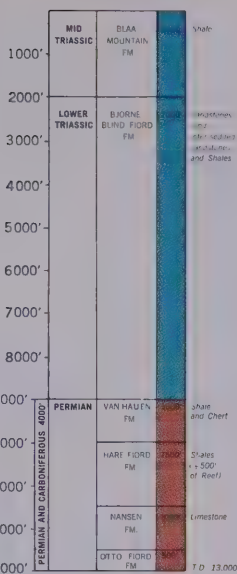
- CPn Hare Fiord Formation 1500'
- 500' Reefal Bioherm ?
- CPn Nansen Formation 1000'

### CARBONIFEROUS

- Co Otto Fiord Formation 500'

4000'

## STRATIGRAPHIC SECTION



## GIBS FIORD AREA ARCTIC ISLANDS — N.W.T.

□ LASSITER KUMA LAND HOLDINGS



## 6. FOSHEIM ANTICLINE

### (a) Geology

The Lobitos-Round Valley group planned to drill on the crest of this giant structure as far back as 1963 and Lassiter would have been one of the participants. However these plans were postponed and a well was drilled on Cornwallis Island instead. The arrangements made at that time resulted in Lassiter and the other participants retaining a valuable working interest in Fosheim and also in the two other giants of the area, Black Top Ridge and Depot Point.

Some 4000' of porous Bjorne sandstones outcrop in the nearby Sawtooth Range, but the well currently being drilled by Panarctic has apparently found them non-productive. There are, nevertheless, high hopes of success in the underlying Carboniferous Permian and it is, therefore, to be hoped that all these deeper formations will be fully evaluated even if drilling beyond contract depth proves necessary.

### (b) Statistics

Acreage . . . . .	A830	
	831	92,592 acres
	832	
	958	
	959	46,066 acres
		<u>138,658 acres</u>
Approximate area of structure . . . . .	44,800 acres or 70 square miles	
Term of Permits before going to lease . . . . .	September, 1975	
Operator . . . . .	Panarctic Oils Ltd.	
Lassiter Kuma . . . . .	A 1¼% working interest in all the permits after Panarctic has drilled to contract depth of 14,000' to earn a 50% interest. This 1¼% interest is subject to a 25% net carried interest.	

## 7. ROMULUS

### (a) Geology

This most attractive anticline, 12 miles long, is north-northeast of the Fosheim structure and extends into the northern part of Permit A958. The prospects, similar to those at May Point, are excellent for discoveries of petroleum in several thick porous sands of Cretaceous and Jurassic ages and in the underlying Heiberg sands as well. Reference should be made to the May Point stratigraphic section for details.

Panarctic will be drilling a 13,000' well immediately after the Fosheim venture is completed on a location just north of Permit A958 and will, therefore, test Lassiter Kuma's interests in the southern part of the structure at no cost to the Company.

### (b) Statistics

Acreage . . . . .	A958 (north half)	11,379 acres*
Approximate area of structure . . . . .	16,000 acres or 25 square miles	
Term of Permit, operator and Lassiter Kuma interest . . . . .	The same as for Fosheim.	
*Acreage included in Fosheim total.		

# LEGEND

## FORMATIONS

### QUATERNARY

Q

### TERTIARY

Te

### CRETACEOUS / TERTIARY

KTe

### CRETACEOUS

Kc

Kh

Ki

J

J

### JURASSIC

J

### TRIASSIC

Trh Heiberg Fm.

Trba Blaa Mountain Fm.

Trbl Blind Fiord/Bjorne Fm.

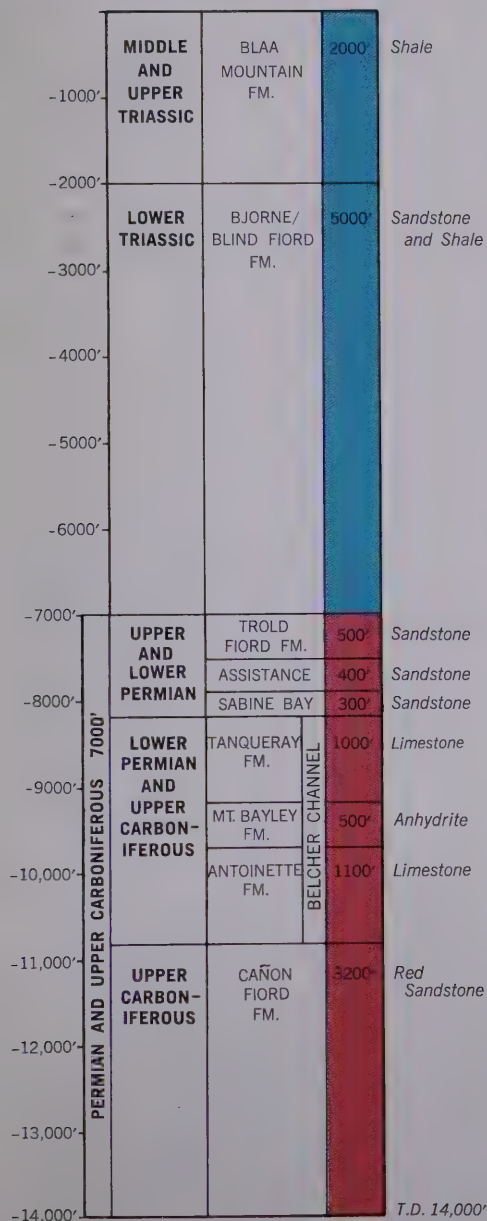
### CARBONIFEROUS/PERMIAN

CP

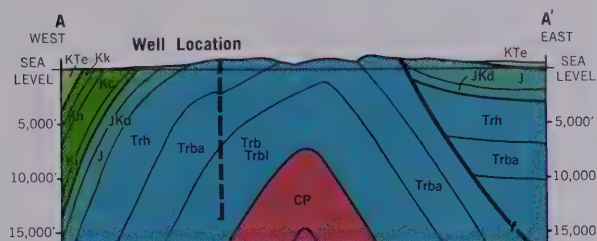
### ORDOVICIAN/SILURIAN

OSD /DEVONIAN

## STRATIGRAPHIC SECTION



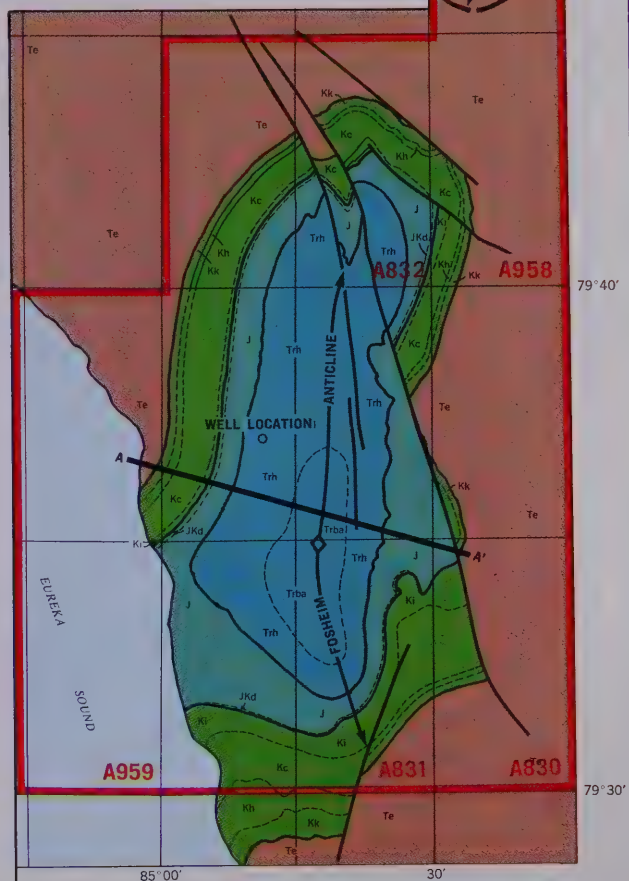
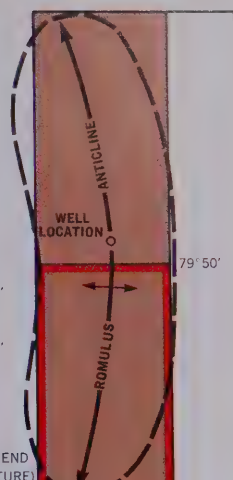
## FOSHEIM Cross Section



Section is based on Surface Geology  
Confidential seismic data presumably shows asymmetrical anticline with crest of Carboniferous/Permian further to west than as shown

## ROMULUS

See May Point for Stratigraphic Section



1 0 1 2 3 4  
SCALE IN MILES

## FOSHEIM PENINSULA AREA

ARCTIC ISLANDS — N.W.T.

□ LASSITER KUMA LAND HOLDINGS



## 8. DEPOT POINT

### (a) Geology

This enormous anticline extending as it does some 30 miles and having a width of 10 miles, is probably the biggest in the Arctic Islands and is fully up to the dimensions of some of the largest oil fields in the Middle East. There is a geological similarity between this structure and Fosheim in that the exploratory well would start in Blaa Mountain caprock, so eroded that not too much of this formation will have to be drilled through in order to reach the Bjerne/Blind Fiord sandstones. It also means that formations in the Permian and Carboniferous can be tested at a reasonable depth. High hopes are held for success in finding thick and extensive porous carbonate and sandstone reservoirs in several of these deeper formations.

### (b) Statistics

Acreage . . . . .	A816-817-818	94,060 acres
	851-852	47,901 acres
	960-961-962-963-964	118,193 acres
		<u>260,154 acres</u>

Approximate area of structure . . . . .	128,000 acres or 200 square miles
Term of Permits before going to lease . . . . .	September, 1975
Operator . . . . .	Panarctic Oils Ltd.
Lassiter Kuma . . . . .	2½% working interest in all permits or 1¼% working interest if Panarctic elects to drill a 50% earning well. Either one is subject to a 25% net carried interest.

LEGEND

FORMATIONS

QUATERNARY

Q

TERTIARY

T<sub>3</sub>

CRETACEOUS

C<sub>3</sub>

JURASSIC

J<sub>3</sub>

TRIASSIC

Trh

Heiberg Fm.

Trba

Blaa Mountain Fm.

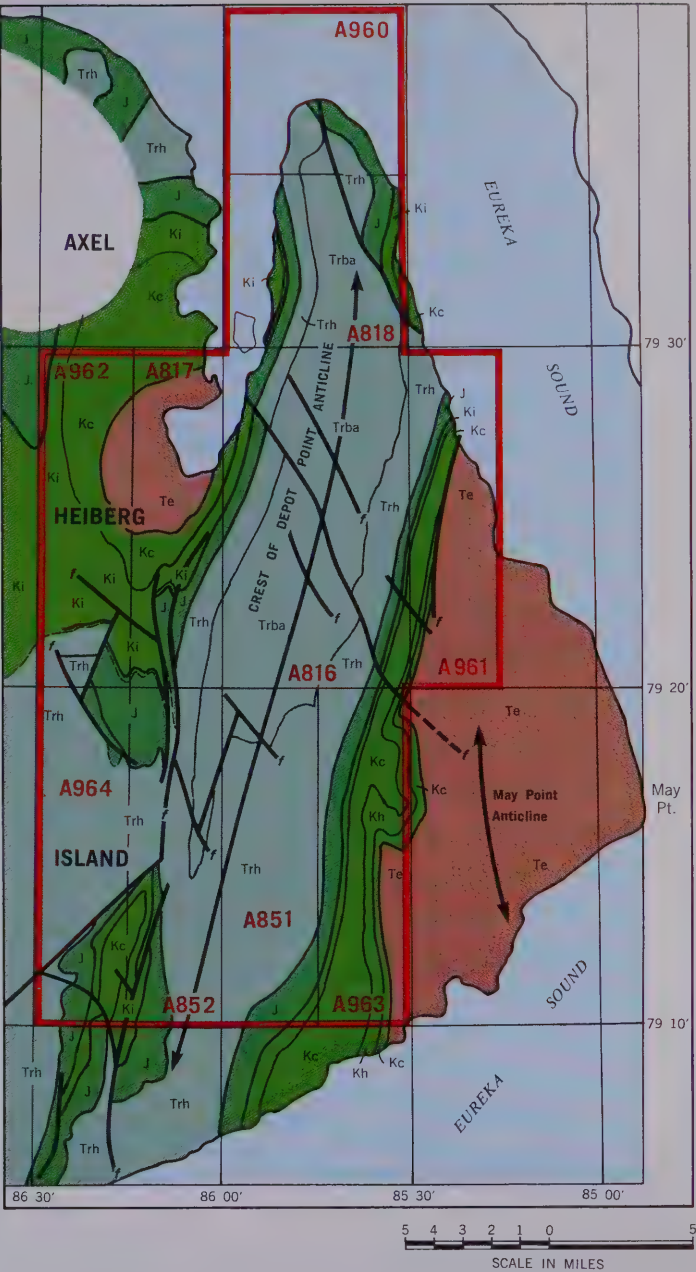
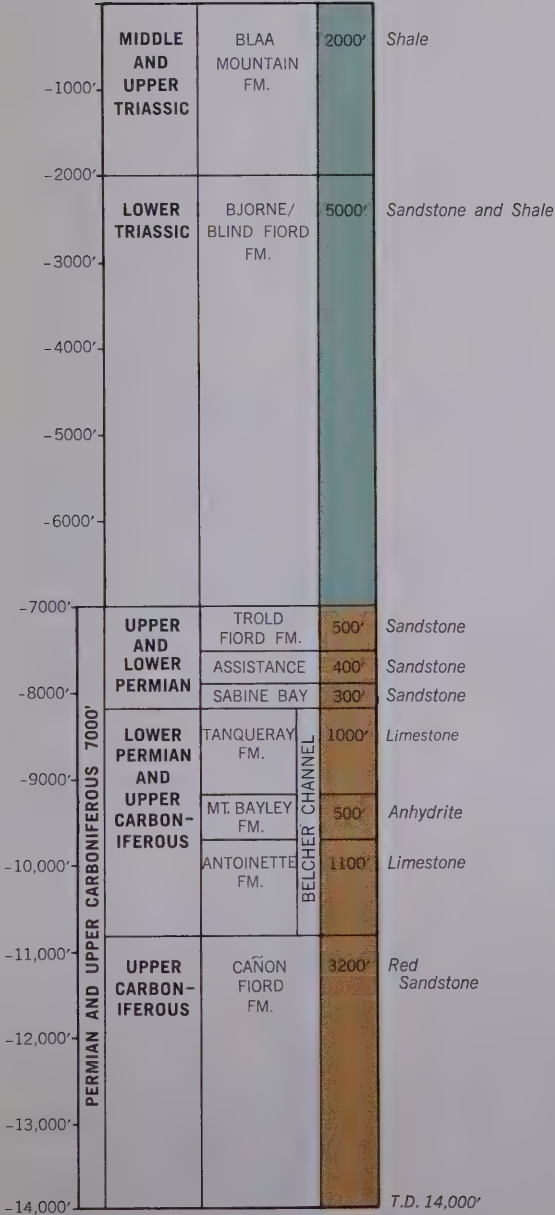
Trb/Trbl

Blind Fiord/Bjorne Fm.

CARBONIFEROUS/PERMIAN

CP

STRATIGRAPHIC SECTION



DEPOT POINT AREA  
ARCTIC ISLANDS — N.W.T.  
LASSITER KUMA LAND HOLDINGS



## 9. MAY POINT

### (a) Geology

This small surface feature is one of most fascinating prospects in the Arctic Islands. Like Lockwood very little of the structure is expressed at the surface. Yet again like Lockwood the combined pay thickness of various potential hydrocarbon horizons is considerable.

In the case of May Point however the prospects do not lie in the Permian and Carboniferous formations but in porous sands of much younger Cretaceous and Jurassic ages. Control over the thickness and porosity of these beds is readily available for they all outcrop on the flanks of the massive Depot Point structure lying immediately to the west. Furthermore additional control is obtained from the Fosheim and Black Top anticlines situated across Eureka Sound to the east. Using these data one can fairly safely predict that several separate reservoir porous sands of Cretaceous Jurassic ages totalling several hundreds of feet in thickness should be encountered by drilling on the crest of the exposed small anticline.

The foregoing reference to probable pay thickness does not take into account possible shallow reservoir sands in the Tertiary and the prospects of thick porous sands in the deeper Triassic Heiberg formation.

Geologically the conditions at May Point should be very similar to those in the Romulus structure east of the Eureka weather station.

### (b) Statistics

Acreage . . . . .	A1241	47,901 acres
Approximate area of structure . . . . .	6,400 acres or 10 square miles	
Term of Permit before going to lease . . . . .		July, 1978
Operator . . . . .		Panarctic Oils Ltd.
Lassiter Kuma . . . . .		10% working interest

# LEGEND

## FORMATIONS

### TERTIARY



### CRETACEOUS

Kanguk Formation

Hassel Formation

Christopher Formation

Isachsen Formation

### JURASSIC/CRETACEOUS

Deer Bay Formation

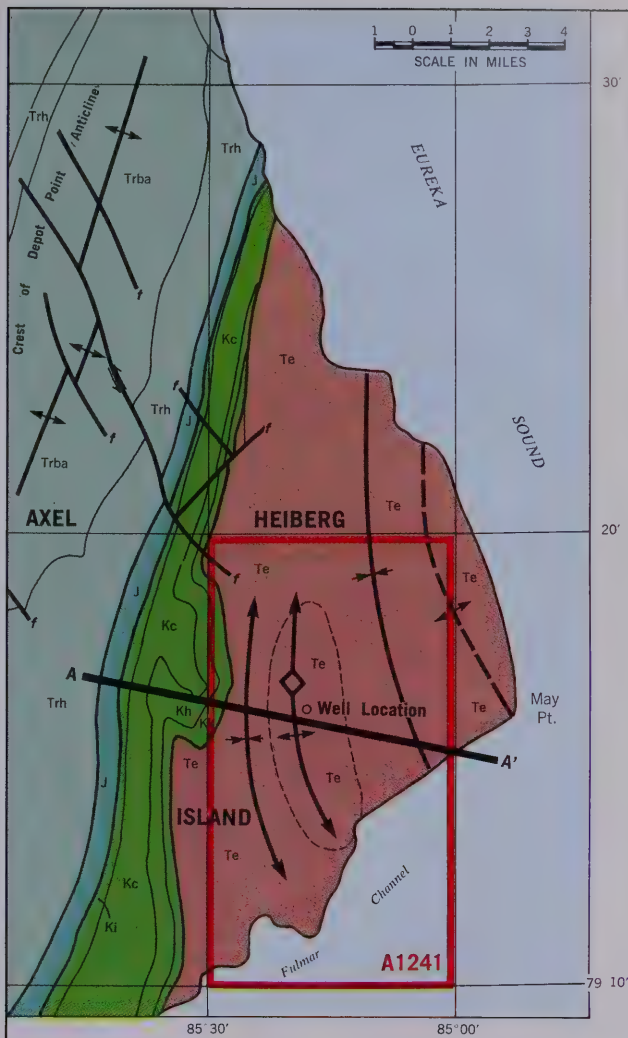
### JURASSIC

Undivided

### TRIASSIC

Trh Heiberg Formation

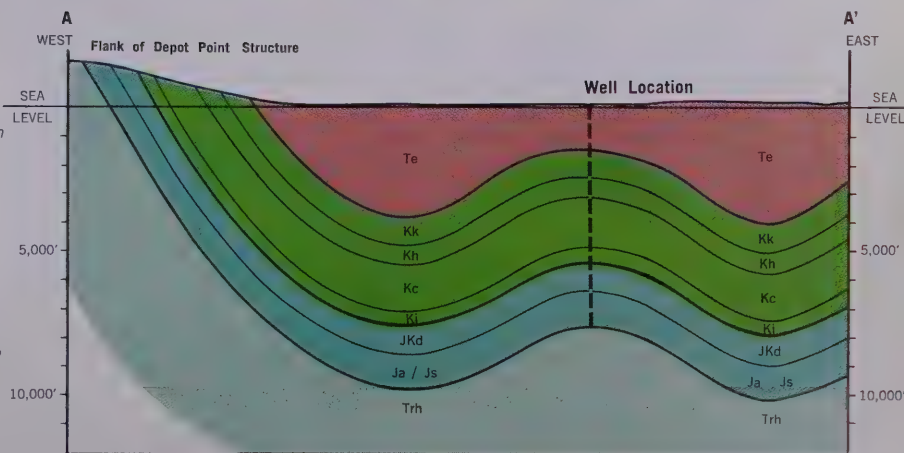
Trba Baa Mountain Formation



## STRATIGRAPHIC SECTION

-1000'	TERTIARY	EUREKA SOUND FM.	1500'	Sandstone, Shale
-2000'	CRET- ACEOUS	KANGUK FM.	950'	Shale
-3000'		HASSEL FM.	700'	Sandstone 300' fine medium grain Shale
-4000'		CHRISTOPHER FM.	1800'	
-5000'		ISACHSEN FM.	450'	Sandstone 150' coarse grain
-6000'	JURASSIC	DEER BAY FM.	1050'	Shale
-7000'		AWINGAK/SAVIK FM.	1100'	Sandstone 350' medium grain
-8000'	TRIASSIC	HEIBERG FM.	5000'	Sandstone
-9000'				
-10,000'				
-11,000'				
-12,000'				

T.D. to Top of Triassic Heiberg Sandstone—7550'



## MAY POINT AREA

ARCTIC ISLANDS — N.W.T.

  LASSITER KUMA LAND HOLDINGS



## V COMPANY PERMITS IN THE WEST ELLESMERE AND BANKS ISLAND AREAS

Although structures and drilling locations are not clearly visible on the surface of these Permits as they are in the Eureka area, there is sufficient outcropping strata and other data to indicate that the prospects for discovery of oil and gas are encouraging.

A single Permit at Svarte Fiord on Ellesmere Island and several Permits on Cornwallis Island (in which the Company's interest is subject to litigation) are not discussed herein because of lack of prospects for the discovery of hydrocarbons.

### 1. BLIND FIORD

#### (a) Geology

This single Permit lies at the southwestern entrance to Blind Fiord. Running southwards into the fiord and presumably on through it is a major Permian fault, with beds that are upthrown on the western side dipping to the west. Close to the head of the fiord and off the Permit are outcrops of Nansen formation reefs of Carboniferous Permian ages. These reefs are as much as 1000' in thickness. The general trend of these reef exposures is southwest and therefore it is possible they will be present in the southern and eastern part of the Permit, underlying the surface Permian Van Hauen shales and cherts, and siltstones and shales of the Triassic Blind Fiord formation.

In addition to these reef type hydrocarbon reservoirs, the prospects of discovering porous carbonates in other members of the Nansen formation, and in red sandstones of the Borup Fiord/Cañon Fiord formation, must be regarded favourably. Anticlinal folds are visible on the surface off the Permit to the north and these could trend southwards under the Permit. There is also the possibility of trapping conditions being present through closure against the major fault that was alluded to earlier on.

However, the most promising prospect is the reef play. Reefs underlying the Permit could act as excellent and prolific reservoirs for petroleum.

#### (b) Statistics

Acreage . . . . .	A1242	52,291 acres
Area of structure . . . . .	Impossible to estimate but possibly small in area but several hundreds of feet thick.	
Term of Permit before going to lease . . . . .	July, 1978	
Operator . . . . .	Panarctic Oils Ltd.	
Lassiter Kuma . . . . .	10% working interest	

LEGEND

FORMATIONS

TRIASSIC

Trh

Heiberg Fm.

Trba

Blaa Mountain Fm.

Trb / Trbl

Blind Fiord / Bjorne Fm.

CARBONIFEROUS / PERMIAN

CP

STRATIGRAPHIC SECTION

PERMIAN AND UPPER CARBONIFEROUS 7500'	TRIASSIC	BLIND FIORD FM.	1000'	Sands and Shales
	PERMIAN	VAN HAUEN FM.	1000'	Shales and Chert
		HARE FIORD FM.	2000'	Shales and inter-bedded Siltstone
		NANSEN FM.	3500'	Top 1000' Reefoid 99% Carbonate
	CARBON-IFEROUS	CANON FIORD FM.	8000'	Red Sandstone and Conglomerate T.D. 8500'

BLIND FIORD AREA  
ARCTIC ISLANDS — N.W.T.  
LASSITER KUMA LAND HOLDINGS



## 2. BJORNE PENINSULA

### (a) Geology

These two contiguous half Permits, while having Triassic rocks on the surface to the west, are largely covered by exposures of Permian formations. Erosion has cut deeply into these Permian beds so the only chance of finding suitable porous reservoir strata lies in the underlying Cañon Fiord formation of Carboniferous age. This formation outcrops to the south and east of the Permits, and gives subsurface data for the two Permits.

There are some signs on the surface of closed structures suitable for oil accumulating but they are not clearly defined. One anticline runs through the middle of the two Permits, and plunges to the northwest. Whether it plunges to the east to give the requisite closure in the 1000' of underlying Cañon Fiord sandstones is not at present certain.

By and large, the prospects of these Permits are for only modest reserves of oil or gas. However one feature of importance is the depth to the prospective Carboniferous reservoirs. This will be relatively shallow and result in reduced exploratory and development drilling if a discovery is in fact made.

### (b) Statistics

Acreage . . . . .	A795	27,514 acres
	796	27,514 acres
		<hr/> 55,028 acres

Area of structure . . . . . Unable to estimate

Term of Permits before going to lease . . . . . August, 1975

Operator . . . . . Panarctic Oils Ltd.

Lassiter Kuma . . . . . 5% working interest subject to a 10% gross over-riding royalty.





3. BANKS ISLAND

(a) Geology

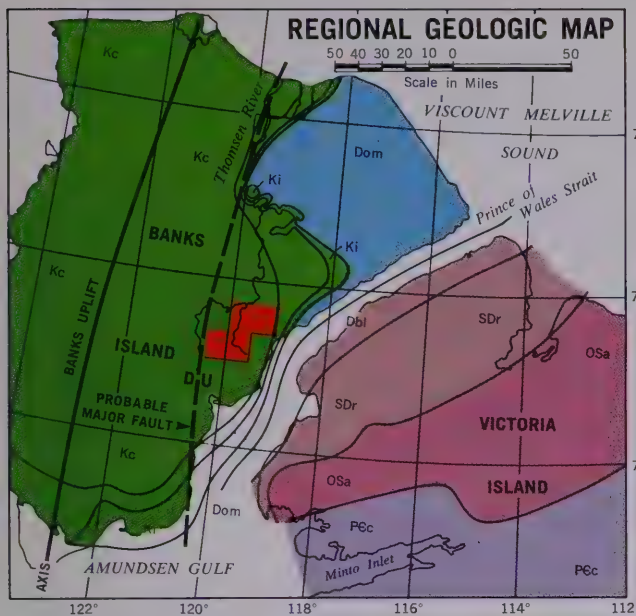
The Company has four Permits on the eastern part of this island close to Prince of Wales Strait, through which the Manhattan sailed without difficulty during its historic voyage to and from Prudhoe Bay.

This accessibility to world markets should prove to be most important because the prospects of oil discovery on the property look reasonable. Based on outcrops lying to the east on Victoria Island and to the north on Banks Island itself, many excellent porous reservoir beds should underlie the Permits. It is most significant that some of these exposed rocks are oil stained and give off a petroleum odour. These porous formations include Allen Bay dolomites, Blue Fiord carbonates, Melville Island formation reefs and sandstones and young Isachsen sandstones. An important feature about these potential reservoirs is the fact that drilling depths should not be unduly deep and will thus result in lower exploration and development costs.

Because of an overall veneer of young rocks and a covering of glacial deposits on the more easterly of the Permits, details of the nature of folding are obscured. Nevertheless, from a regional point of view the Banks Island uplift running north to south across the island is an important feature while a probable major fault, also running north and south in the general vicinity of the Thomsen River Valley, could also be structurally important. The configuration of the Thomsen River bifurcation in the neighbourhood of Permit A1244 and the marked fracturing and fissuring clearly seen on the surface of this Permit—the stress area—suggest the presence of reef type reservoirs as well as folded anticlinal traps.

(b) Statistics

Acreage . . . . .	A1243	76,808 acres
	1244	76,808 acres
	1245	76,098 acres
	1246	76,098 acres
		<u>305,812 acres</u>
Area of structure . . . . .	Impossible to estimate but could possibly underlie a large part of Permit A1244.	
Term of Permits before going to lease . . . . .	September, 1978	
Operator . . . . .	Panarctic Oils Ltd.	
Lassiter Kuma . . . . .	10% working interest	



## BANKS ISLAND AREA

ARCTIC ISLANDS — N.W.T.



### CRETACEOUS

#### ISACHSEN FORMATION

Porous sandstone which should underlie property and provide excellent reservoir rock. The overlying Christopher Formation of impervious shale would provide very good reservoir cap rock.

fractures. Westward dipping beds under company property should provide excellent reservoirs for oil and gas.



### SILURIAN

#### READ BAY FORMATION

Some vugs with dead oil staining and pyrobitumen.



### UPPER AND MIDDLE DEVONIAN

#### MELVILLE ISLAND OR OKSE FORMATIONS

(a) Sandstone beds, some of which are very porous and underlying company property should provide excellent reservoirs for oil and gas.

(b) Limestone reef exposures, 200' thick should also be good reservoirs under the company property.



### SILURIAN AND ORDOVICIAN

#### ALLEN BAY — CORNWALLIS FORMATION EQUIVALENT

Dolomite — Much good vuggy porosity and also good intercrystalline porosity. Petroliferous odour. Westward dipping beds under company property should provide excellent reservoirs for oil and gas.



### MID DEVONIAN

#### BLUE FIORD FORMATION

Good intercrystalline porosity. Black bitumen in vugs and

### FORMATIONS

#### QUATERNARY



#### CRETACEOUS/TERTIARY/CENOZOIC



Eureka and Beaufort Formation

#### CRETACEOUS



Christopher Formation 500' (and overlying formations)



Isachsen Formation 1000'

#### DEVONIAN



Melville/Okse Formation 4000'



Blue Fiord Formation 1000'

#### SILURIAN/DEVONIAN



Read Bay Formation 1000'

#### ORDOVICIAN/SILURIAN



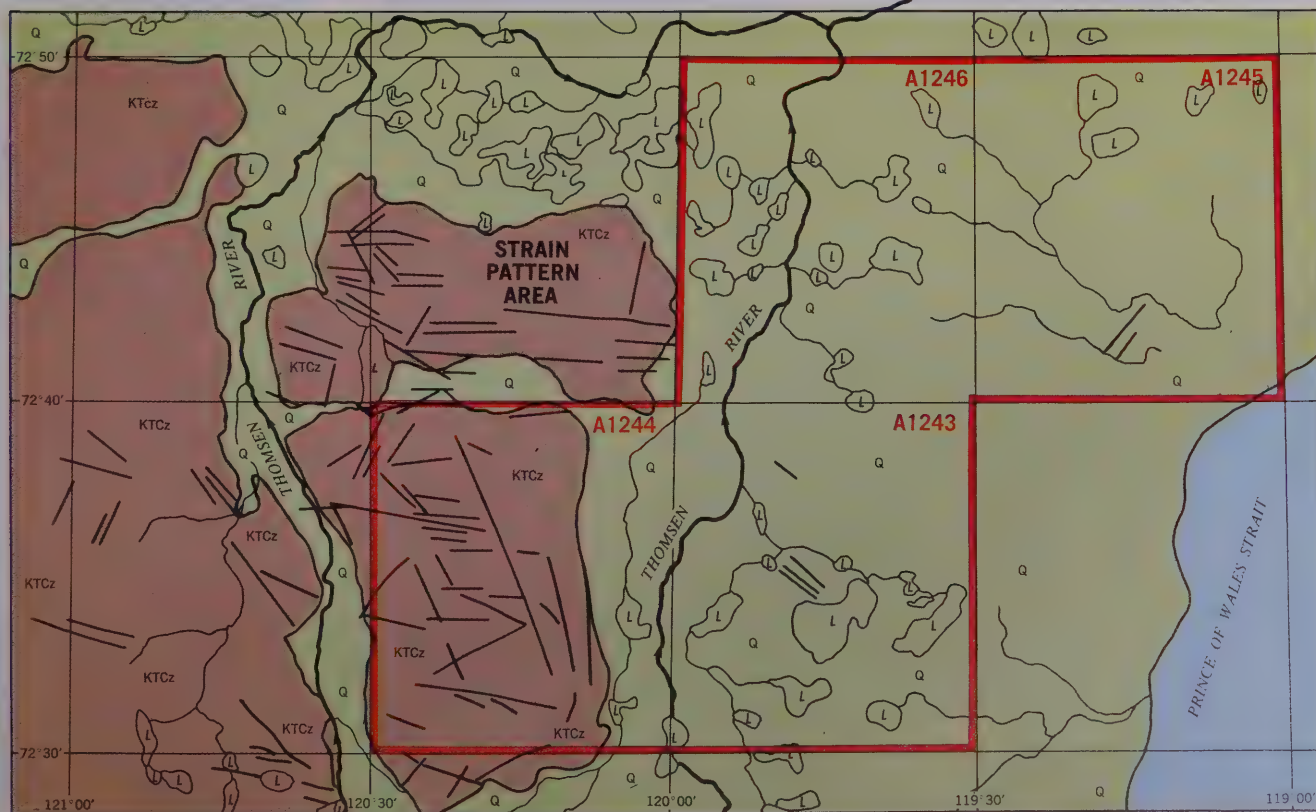
Allen Bay Formation 1000'

### PERMIT BLOCKS SHOWING STRAIN PATTERN AREA



LASSLITER KUMA LAND HOLDINGS

Total Depth: From top of Cretaceous (Christopher Formation) to base of Allen Bay—8500'. Add 1000' - 2000' to penetrate surface (Eureka and Beaufort Sea Formations).





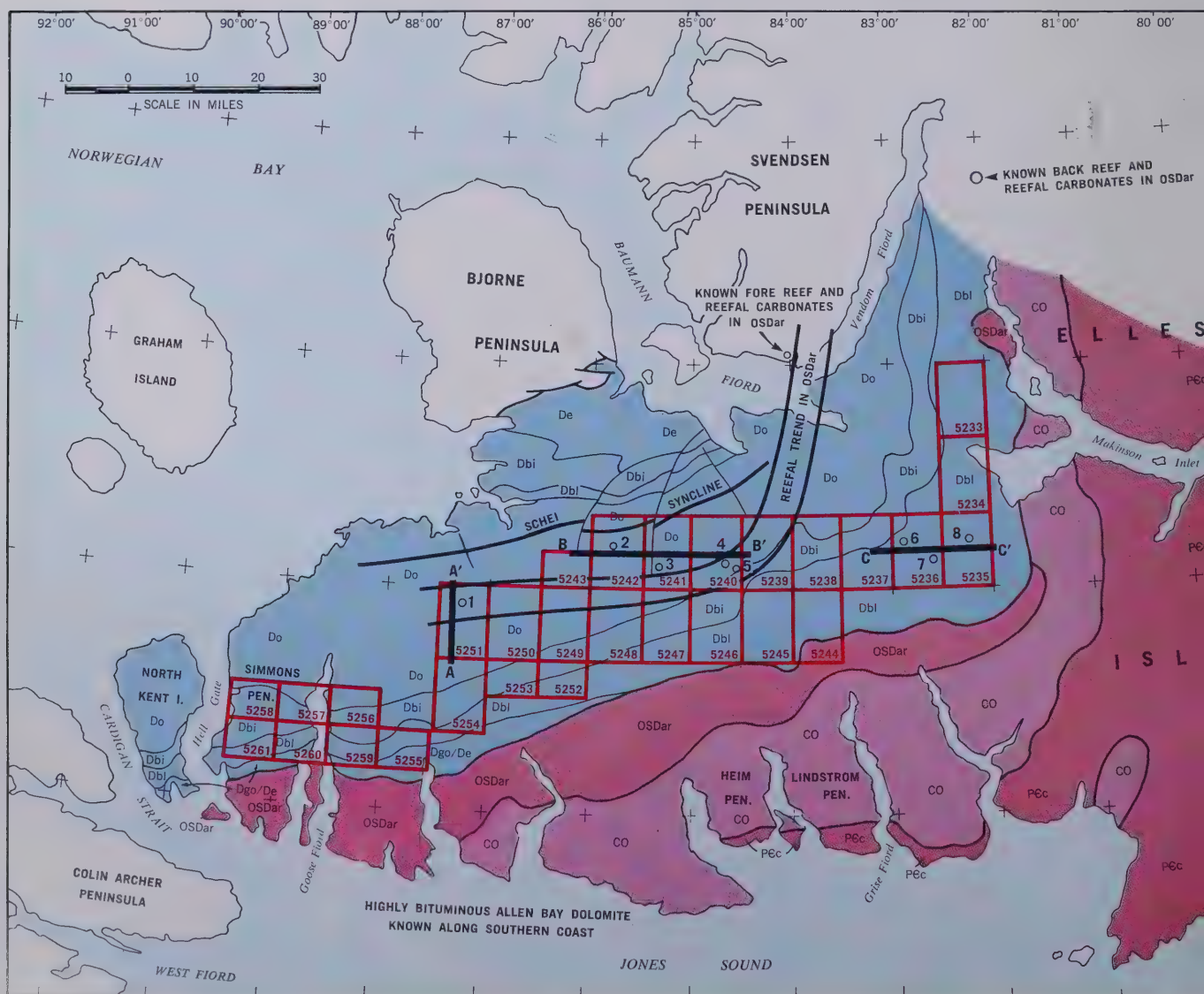
## VI COMPANY PERMITS IN THE SOUTH ELLESMERE AREA

The holdings in this group differ from those of the preceding two groups in that they were acquired because of favourable regional considerations and not because of the presence of specific structural plays.

### 1. GOOSE FIORD, SCHEI SYNCLINE, AND MACKINSON INLET PERMITS

#### (a) Geology

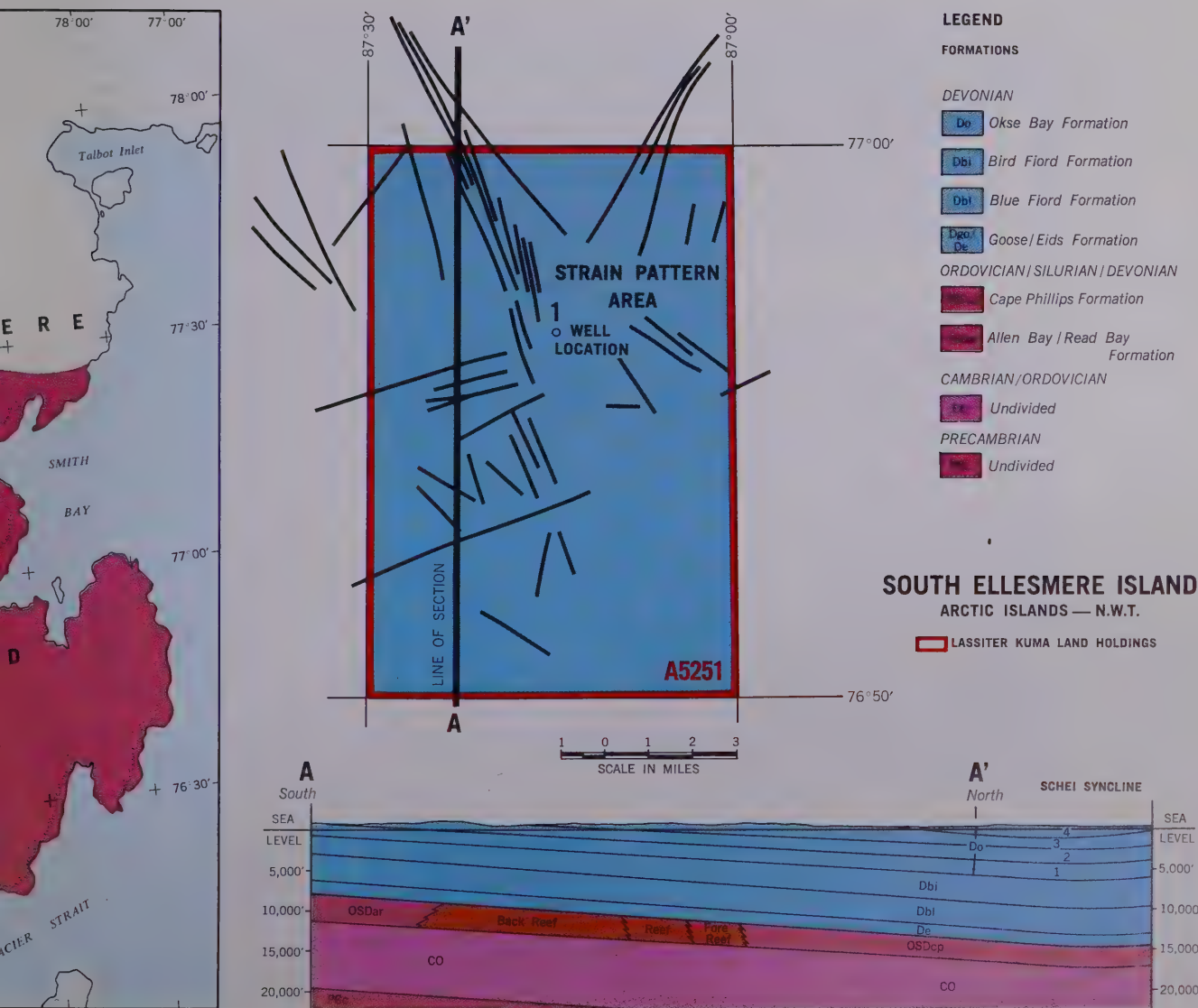
This extensive group of Permits amounting to nearly 1.4 million acres is situated on the edge of the Franklinian Geosyncline. Outcrops of beds lying to the south and east show that porous reservoir formations will be found in abundance under the Permits. These prospective beds range from the well known Allen Bay dolomites through Blue Fiord carbonates to Okse Bay sandstones.



In addition, Allen Bay-Read Bay reefs are exposed off the acreage to the north, with a general trend that indicates that the same reefs—excellent as reservoirs for oil and gas—could underlie a number of the Permits.

The location of these reefs has been suggested by the appearance of surface fissures and fractures in certain areas. Two Permits that are of interest in this respect are A5240 and A5251. Experience in the Arctic Paleozoics has demonstrated that inaccuracies in seismic surveys occur unless control is obtained from a drilled well. Nevertheless some seismic work on these strain areas should be carried out to see if reefing conditions can be detected. The reef, if present, should be encountered at a depth of 11,000-12,000 feet and could be several hundred feet in thickness.

Reverting back to the other porous formations underlying the Permits, closed anticlines have not been discovered so far. However faults of major magnitude do exist and could in certain places trap hydrocarbons. Based on aerial photographs, interesting locations for relatively shallow wells with the





Allen Bay dolomite as the main prospect lie in Permits A5235 and A5236. Further to the west Permit A5240 may be favourable for Blue Fiord carbonate possibilities while Okse Bay sandstone prospects might underlie Permits A5241 and A5242. Further studies will have to be made before drilling and these are proceeding.

Geological parties have been exploring the Lassiter Kuma Permits during the two summer seasons of 1970 and 1971. An extract from a report prepared for the Company by J. C. Sproule and Associates of Calgary relating to Group A of Permits situated along the southern edge of the Southern Ellesmere Fold Belt, namely Permits A5237 to A5243 inclusive and Permits A5245 to A5251 inclusive, reads as follows:

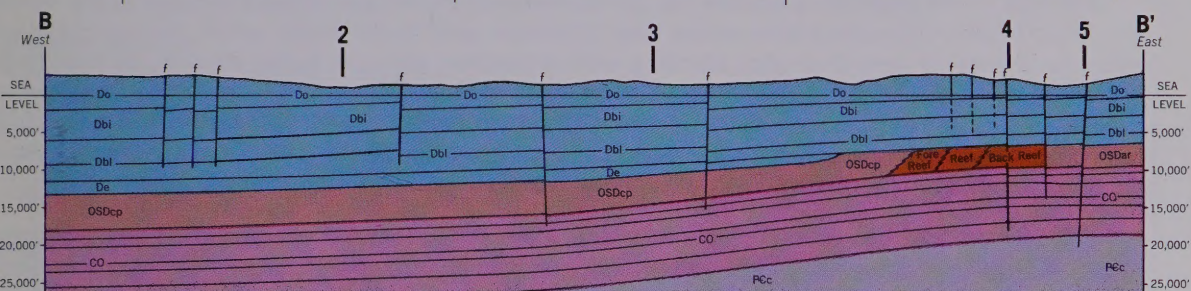
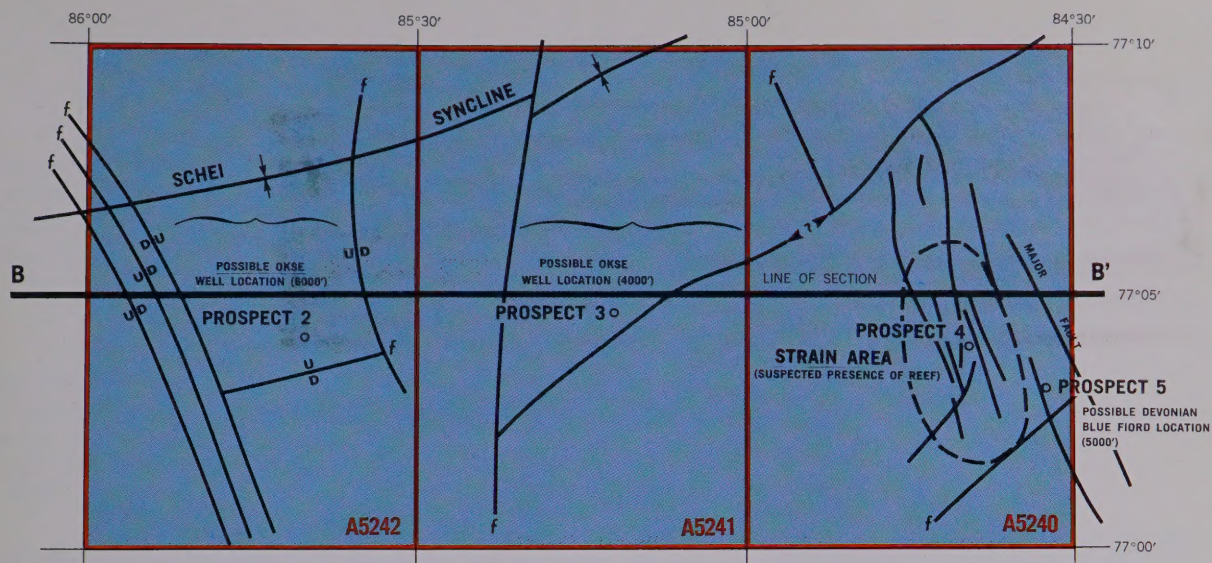
"Group A of the Permit Areas has excellent possibilities for the entrapment of hydrocarbons and the potential of these permit areas is considered to be one of the best in the Palaeozoic portion of the Arctic Islands. The marine environment in which Ordovician to Middle Devonian beds of this area were deposited is conducive to hydrocarbon generation and the Allen Bay in particular is highly bituminous. Important facies changes occurred during the Silurian. The carbonates of the Allen Bay and Read Bay formations that occur in the east and south change towards the west and north abruptly into shales of the Cape Phillips formation. This facies change is accompanied by reefing of the facies front and is well documented from various parts of the Canadian Arctic Islands."

However, perhaps more important than reef and fault type reservoir prospects are the excellent opportunities for hydrocarbons in stratigraphic traps in the Okse formation under Permits in the vicinity of the regional Schei Syncline. Sands of considerable thickness are present and these with shale beds pinching them out could form major oil and gas reservoirs. Gas was encountered in the Okse equivalent in the Winter Harbour well drilled on Melville Island in 1961.

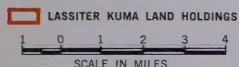
From all the foregoing it can be concluded that there are good chances of major discoveries. When the production stage is reached the easier conditions for the shipment of oil and liquefied gas from Jones Sound or from Mackinson Inlet will allow ready access to world markets.

## (b) Statistics

Acreage . . . . .	A5233-5261 inclusive	1,390,319 acres
Area of structures . . . . .		Unable to estimate
Term of Permits before going to lease . . . . .		May, 1981
Operator . . . . .		Lassiter Kuma
Lassiter Kuma . . . . .	90% working interest, subject to a 2% gross over-riding royalty.	



## SOUTH ELLESMERE ISLAND PERMITS



### LEGEND

#### FORMATIONS

##### DEVONIAN

Do Okse Bay Formation

Dbl Bird Fiord Formation

Dbl Blue Fiord Formation

De Eids Fiord Formation

##### SILURIAN/DEVONIAN

SDr Read Bay Formation

##### ORDOVICIAN/SILURIAN

OSa Allen Bay Formation

##### ORDOVICIAN/SILURIAN/DEVONIAN

OSDar Allen Bay/Read Bay Formations

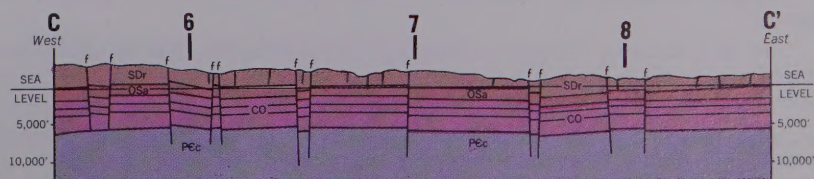
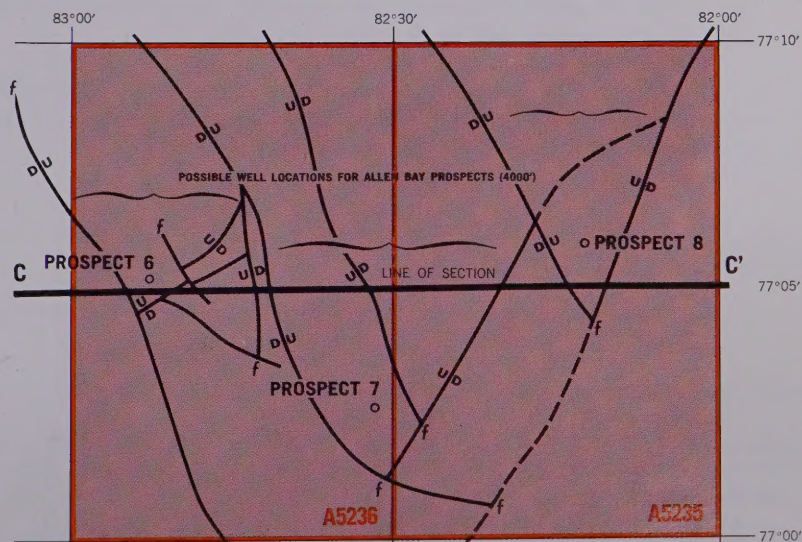
OSDcp Cape Phillips FM.

##### CAMBRIAN/ORDOVICIAN

CO

##### PRECAMBRIAN

PCc









**LASSITER KUMA OILS LTD.**

September 3, 1971

**ASSETS**

	Balance Sheet	Supplementary Information (unaudited)	
		(note 1)	(note 2)
Current assets:			
Cash and short term deposits . . . . .	\$ 261,686	261,686	261,686
Exploratory permits (notes 1, 2 and 3) . . . . .	210,739	803,324	4,237,900
Fixed assets, at cost less accumulated depreciation of \$1,407 . . . . .	6,593	6,593	6,593
	<u>\$ 479,018</u>	<u>1,071,603</u>	<u>4,506,179</u>

**LIABILITIES AND SHAREHOLDERS' EQUITY**

Current liabilities:			
Accounts payable . . . . .	\$ 7,532	7,532	7,532
Due to directors and associated companies:			
12% loans payable . . . . .	50,000	50,000	50,000
Other . . . . .	18,658	18,658	18,658
	<u>68,658</u>	<u>68,658</u>	<u>68,658</u>
Total current liabilities . . . . .	76,190	76,190	76,190
Long term liabilities:			
Due to directors and associated companies:			
12% loans payable . . . . .	35,318	35,318	35,318
Other . . . . .	41,274	41,274	41,274
	<u>76,592</u>	<u>76,592</u>	<u>76,592</u>
Other . . . . .	18,476	18,476	18,476
	<u>95,068</u>	<u>95,068</u>	<u>95,068</u>
Shareholders' equity:			
Capital stock:			
Shares of no par value. Authorized 5,000,000 shares; issued 2,445,876 shares . . . . .	419,801	419,801	419,801
Capital surplus:			
Exploratory permit rentals satisfied by farmees . . . . .	—	592,585	—
Excess of appraised value of exploratory permits over cost . . . . .	—	—	4,027,161
Deficit . . . . .	(112,041)	(112,041)	(112,041)
Total shareholders' equity . . . . .	<u>307,760</u>	<u>900,345</u>	<u>4,334,921</u>
Contingent liability (note 3)	<u>\$ 479,018</u>	<u>1,071,603</u>	<u>4,506,179</u>

**Notes to Balance Sheet**

1. The company's interest in certain permits on Cornwallis Island is currently subject to legal proceedings. In the opinion of company officials its claim will be upheld.
2. Under the Canada Oil and Gas Land Regulations deposits may be refunded under certain conditions upon the expending of allowable expenditures. Conversely, deposits may under certain conditions be subject to forfeiture and/or further deposits may be required to be put up to maintain permits in good standing.
3. The company is contingently liable in the amount of \$258,548 in respect to a guarantee given under the Canada Oil and Gas Land Regulations. Certain permits are pledged as security in connection with that guarantee. Exploration work to the extent of \$178,700 has been undertaken by a farmee in partial satisfaction of this guarantee.

**Notes to Supplementary Information**

1. The figures in this column are based on audited figures except that exploratory permits are shown at cost plus rentals satisfied by farmees, with the excess over cost being credited to capital surplus.
2. The figures in this column are based on audited figures except that exploratory permits are shown at appraised values as of May 31, 1971 as appraised by J. C. Sproule and Associates, whose report states that "The values are presented as a value to the company for orderly development. To arrive at a fair market value for immediate disposal it would, in our opinion, be necessary to apply a discount factor of up to 40 per cent to the values shown to allow for a reasonable rate of return to a purchaser." The excess of appraised values over cost has been credited to capital surplus.



